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ABSTRACT

Health behaviors of all students, including adolescents, have direct impact upon both personal well being and actualization of potential for maximum learning. This paper reviews examples of concrete health behaviors that both positively and negatively influence the two factors, and summarizes present objectives for the nation in the health promotion/disease prevention area. The major concepts presented include the underlying principles and theories of health behavior. The paper concludes with recommendations and concerns for practical implementation of health programs in the schools. Appendices include: (1) Surgeon General's goals for 1990 and objectives for the nation that can be directly attained or influenced in important ways by schools; (2) a typology of health behaviors; (3) Bloom's taxonomy of health behaviors; (4) locus of control summaries; (5) Piaget's stages of cognitive development and Kohlberg's stages of moral development and relationships between Piaget and Kohlberg; (6) a health belief model; and (7) the PRECEDE model. (Author/JMK)

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UNDERSTANDING HEALTH BEHAVIORS OF ADOLESCENCE - IMPLICATIONS FOR THE SCHOOLS

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ABSTRACT: Health behaviors of students have direct impact upon both personal well being and actualization of potential for maximum learning. The paper reviews examples of concrete health behaviors that both positively and negatively influence these two factors, and summarizes present objectives for the nation in the health promotion/disease prevention area. The major concepts presented include the underlying principles and theories of health behavior. The paper will conclude with recommendations and concerns for practical implementation of health programs in the schools.

INTRODUCTION

The comprehensive school health program has traditionally encompassed school health education, school health services, and administrative policies to ensure a safe and healthy school environment. The role of comprehensive school health has never been more clear. The evolution of national disease prevention and health promotion strategies has resulted in specifically delineated objectives for the nation that can be directly attained or influenced in important ways by schools. These new federal policies are articulated in the form of measurable goals and behavioral objectives (Appendix I.) that are based upon concrete data collected from various epidemiological methods. In essence, schools, and society in general, can be held accountable for success or failure in achieving these goals and objectives.

In the pursuit of attaining these specific goals and objectives we must, as educators, influence directly the behaviors of our constituents—our students and their families. As we all are aware, there are infinite complexities involved in changing behavior, health behavior being no exception. (Let me digress here briefly, and state my contention that the process of health educating students in the schools is the responsibility of all faculty, staff, and administration. I can think of no curricular area of the school that does

not, in some way, impact upon the social, mental, physical, or spiritual (values) aspects of the individual student). For purposes of semantics school health education has been defined[2] as; "any combination of learning experiences initiated by personnel in the preschool, school, or college setting to develop the behavioral skills required to cope with the challenges to health expected in, and cognitive skills required to comprehend the further learning schedules for, the students immediate years ahead."

The purpose of this paper is to briefly review a few of the many theoretical tenents that can help us understand health behavior. (Again for clarification, health behaviors have been defined in numerous ways. Appendix II includes some of these definitions). Specifically, I want to address the determinants of health behavior, the myriad of factors that influence behaviors that lead to outcomes. As change agents, we cannot influence behavior unless we understand the underlying processes. For the purposes of brevity, many factors and theories will be mentioned only briefly (For example, the influences of religiousity or the various learning theories such as behaviorism). This does not necessarily negate their importance as determinants of health behavior, but rather reflects my personal selectivity to include what I consider to be most pertinent.

First, some examples of health related behaviors[3] that have had negative impact on total individual and societal well being and have decreased potentiation for maximal learning:

1. Adolescents' use of alcohol, marijuana, and other illicit drugs is now an established fact of school life.
2. Both homicide and suicide by adolescents have increased.
3. More young girls, as compared to boys, are starting to smoke at earlier ages.
4. Teenage sexual behavior has resulted in an epidemic of pregnancies and an increased incidence of STD's.

5. Lack of exercise among adolescence may be a major precursor to obesity. Eating disorders such as bulemia and anorexia may be much more prevelant than anticipated.

Over sensationalizing the obvious health behaviors related to problems of our youth may let us forget the majority who are maintaining a relatively high level of wellness under difficult circumstances. As young people develop self-awareness and self-responsibility we must, as educators, continuously reinforce the practice of healthy lifestyles. Decision-making skills that result in positive outcomes require reaffirmation. Over-maligning the minority who have difficult problems may alienate us from the majority in terms of a perceived generation gap/credibility gap. (Let us learn from the drug education fiasco of the 1960's which resulted in just such a phenomenon).

What are the underlying theoretical tenets of health behavior? How do they interrelate? Are there models which can simplify the concepts? What implications result for school implementation of health education programs?

TENETS OF HEALTH BEHAVIOR

In general, the concept "health behavior" implies a multidimensional determinant model that, with an infinite variety of variances, includes these types of factors: sociocultural influences; psychosocial dictums; learning theories; and various theoretical models. Any one health behavior, for example the behavior "smoking" or "not smoking," can be partially analyzed using Bloom's Taxonomy of the cognitive, affective, and action domains. The action domain may be observable or non-observable or delayed (Appendix III).

Various tenets are presented in the order of sociocultural; psychosocial; learning theory; and general theoretical paradigms developed to understand health behavior. No effort is made to weigh one tenet against another in terms of possible influence in determining health behavior.

SOCIOCULTURAL FACTORS

Sociocultural factors include determinants of health behavior that eminate from cultural groups or social segments of populations. The influences would include these factors: ethnic groups; religious groups;[4] socioeconomic standing; sex roles; various anthropological considerations; and even geographic considerations such as topography, weather and climate, and natural resources that all influence culture.

National Health Survey's conducted by the National Institutes of Health have consistently demonstrated that the number one predictor correlated with low health status as measured by negative health indices is a low socioeconomic status. Analysis of this one significant factor demonstrates a differentiation in health values of the low-income group[5] as compared to the American middle class. Lower class Americans tend to be fatalistic, are present rather than future oriented, may feel alienated from mainstream society, have significantly less accurate health information, delay longer in seeking help, and may be discriminated against in terms of availability and accessibility of health care.[6]

Foremost among sociocultural influences, at the microlevel of the school, is peer influence. Based on the assumption that this influence accounts for much of the variance of any/one individual making good or poor health decisions, health educators have been teaching students selected behavioral skills based upon McGuires Inoculation Theory.[7,8] (Simply stated, the theory proposes that an individual can better resist persuasion from peers if he/she learns the argument's strategy and content beforehand, in essence decreasing the persuasive impact of the argument). Varying degrees of success have been reported in teaching students to resist peer pressure to use alcohol and to smoke.

PSYCHOSOCIAL FACTORS

These factors comprise a matrix of influences that are interrelated with sociocultural variables. Most of the influences are easiest expressed in the form of models and theories. Some specific and partially independent variables include motivation theory based on perceptions of a situation and expectations of consequences of an action, cues to action or nonaction meaning environmental influences, fears, anxieties, positive expectations, etc. that initiate the psychological process, and attitudes, beliefs, and values that are all integrated with culture.

Values

One value often investigated as a potentially significant variable is health salience, or the value a person puts on his/her own well being. In general, studies indicate people value health most after they lose it. In essence, health is taken for granted.

Locus of Control

Another psychological construct often analyzed is health locus of control[9], based upon Rotter's social learning theory (Appendix IV). Health locus of control is an analysis of an individual's belief system, whereby reinforcement occurs from one of two generalized expectancies. (The expectancy that the behavior will lead to a particular reinforcement in that situation). The first type of reinforcement is under the influence of the individual whereby one has a sense of control of his/her own destiny (internal). The second type of reinforcement is related to the individuals belief that one's destiny, hence reinforcement, results from fate, chance, or influence of powerful others (external).

Developmental and Adaptation Theories

Other psychosocial developmental theories that have applicability to understanding health behavior include Maslow's[10] Humanistic Theory describing the route to self-actualization, Erik Ericksons Developmental Theory[11] which identifies eight stages of ego development from birth to death, and adaptation theory[12] with all it's corollaries.

Adaptation theory[13] postulates that a healthy person is one who can function adequately in a changing environment where his/her flexibility and versatility allows reorientation and reestablishment of equalibrium as the situation and/or environment changes.

Self-Concept Development

Of perhaps greatest contemporary significance is the justified attention being given to the psychological constructs of self-esteem and self-concept. Developmental psychologists are emphasizing the imperatives of self-concept development through parental behavior as well as teacher behavior. Self-esteem and self-concept are manifested by feelings of worth, self-love and self-acceptance, a sense of autonomy and independence, and the ability to love. Although these concepts are abstract and difficult to measure, most of us would agree they are fundamental to achieving and maintaining health.

Cognitive Dissonance

In discussing the relationship between attitudes and knowledge one must explore the consistencies and inconsistencies. For example, most people are aware of the fact that wearing a seatbelt increases the chances of surviving in a car accident, yet over half[14] of the U.S. population seldom or never wears seatbelts. The old assumption that the "attitude" is the father of the action has been questioned. Experimental evidence for the hypothesis that behavior

causes attitudes emanated from the testing of Festinger's theory of cognitive dissonance.[15]

He postulated that if a person is motivated or induced to engage in a behavior that is inconsistent with his beliefs or attitudes, he/she will experience the discomfort of "cognitive dissonance." The process to resolve inconsistency between beliefs or attitudes and behavior entails modification of belief or attitude change toward cognitive consistency. For example, one may have remorse about a premarital sexual behavior that conflicts with parental and religious dictums. Consequently, the person will either terminate the new behavior or, more likely, develop new beliefs and attitudes about premarital sex to establish cognitive consistency. However, one of the major resolution mechanisms is denial, where, for example, a person justifies the behavior of not wearing seatbelts because an "accident will not happen to me."

LEARNING THEORIES

It may be most accurate to say that all learning theories, based upon their respective esteem among educational psychologists, have some merit in accounting for or explaining health behavior. Among these theories a few stand out as significant.

Social Learning Theory & Behavioristic Theory

The acquisition, maintenance, and modification of behavior are explained by basic reinforcement processes.[16,17] The concepts of stimulus and response (classical conditioning) is central to most of these learning theories. Operant conditioning, postulated by Skinner, defined a process in which the frequency of a behavior is modified by its consequences. Rotter's Social Learning Theory

further refined the consequences as reinforcement expectancies, previously defined as internal and external locus of control.

Two practical applications of these theories in regards to health behavior are role modeling, a social learning perspective, and behavior modification. Role modeling has been evaluated as a determinant of health behavior from the perspective of parental modeling, teacher modeling, health care professional modeling, and peer modeling. The basic assumption is that observational learning occurs as manifested in emulation of the role model.

Behavior modification is a purposeful effort to either change or encourage maintenance of a particular behavior. These techniques include shaping behavior through the use of positive and negative reinforcement. These techniques have been used to modify health behaviors in groups (smoking cessation, weight loss, etc.) and in self-directed contract based lifestyle improvement projects. Other methodological applications have included role playing, assertion training, simulation, and problem solving through demonstration by role models.

Developmental Theories - Cognitive/Moral

Developmental models germane to health behavior relate to the abilities to make quality decisions. Piaget's[18] Stages of Cognitive Development and Kohlberg's Stages of Moral Development (Appendix V) suggest that decision making is dependent upon the cognitive and moral development of the individual. Kolbe, Iverson, Kreuter, Hochbaum and Christensen[19] addressed this relationship, among other paradigms, to explain this relationship (Appendix VI).

Decision Making Theories

Decision making,[20] as related to health behavior, implies a choice from among several alternatives. For every alternative there are assumed both

positive and negative consequences resulting in some proportionate amount of risk for each choice. Attitudes, values, and beliefs can greatly influence the perceived attractiveness of each choice.

Values clarification[21] was a methodology developed to emphasize the importance of values in making and maintaining choices. The values clarification process includes the sequential steps of choosing freely from among alternatives after thoughtful consideration of the choices, prizing the choice taken by public affirmation, and acting conscientiously and consistently with the choice. This technique has been used often in both drug prevention education and sexuality education.

GENERAL THEORETICAL PARADIGMS

Among several models that have been presented in the literature two theoretical tenets related to decision making about health behavior stand out. The classical model developed by Rosenstock and Hochbaum is now called the Health Belief Model,[22] a theory with considerable emphasis on the variables such as attitudes, beliefs, and values to explain and predict health behavior. The second model, developed by Green, Kreuter, Deeds, and Partridge[23] is titled PRECEDE, which is an acronym for predisposing, reinforcing, and enabling causes in educational diagnosis and evaluation.

The Health Belief Model (Appendix VII) was developed in the 1950's by behavioral scientists of the U.S. Public Health Service to predict patient utilization of TB screening clinics. The model has been used extensively to understand various preventive health behaviors. The major dictims are defined:

1. Perceived Susceptibility: Based on personal belief that a person is either highly susceptible or not at all susceptible to a condition (death, disease, accident).

2. Perceived Seriousness: The degree of seriousness as judged by the individual in terms of emotional arousal and kinds of difficulties resulting from the condition.

3. Perceived Benefits of Taking Action and Barriers to Taking Action: Refers to the persons beliefs about the pros of taking a preventive action weighted against the beliefs about barriers (inconvenient, expensive, unpleasant, painful) to taking action. These beliefs may or may not be in concert with objective reality.

4. Cues to Action: Refers to the "incentives" to take action, usually meaning the combined levels of perceived susceptibility and severity resulting in some degree of intensity.

5. Other Variables: Concept of salience of health and of illness. This model emphasizes negative valent with a clearcut avoidance orientation of some perceived unwelcome condition.

In essence, the HBM has been useful in attempting to understand health behavior. However, the major question is whether the avoidance orientation is adequate to account for the so-called positive health actions. Also, the model seems more practical in explaining one time behaviors, such as seeking protective immunization, rather than repetitive behaviors such as jogging and monthly self-breast examination.

The PRECEDE model (Appendix VII) was developed on the premise of the question "What factors are important to understand and influence in order to elicit a desired decision about a specified behavior?" Following up from the HBM, which focused on certain perceptions of the individual in predicting the liklihood of taking positive health action, the PRECEDE model adds to these "predisposing factors" (knowledge, attitudes, values, perceptions, norms) the environmental factors called "enabling" and "reinforcing." "Enabling factors," including availability of resources, skills such as decision-making, "reinforcing factors" such as attitudes and behaviors of school administrators,

teachers, staff, plus the "predisposing factors" all combine and interact to influence health behaviors.

As a program development model, the purpose of PRECEDE is centered upon recognizing the factors so that they can be positively modified to influence desired and prescribed health behaviors. However, initially the model works well as a basic analytical tool to describe determinants of a health/social problem by starting on the right side of the continuum and working left (Retrospective epidemiological review).

CONCLUSION

The overview of tenets of health behavior demonstrates the complexities involved in both understanding health behaviors and in developing policies and programs to change behaviors. Within the profession of health education there is a continuing dialogue concerning both the efficacy and the ethics of modifying health behavior.[24, 25]

IMPLICATIONS FOR THE SCHOOLS

Stainbrook and Green[26] have recently concluded that "In view of persistent difficulties both inside and outside the health education field to find consistent relationships between factual knowledge, attitudes, and health behaviors, the rationale for more behaviorally based planning has become inescapable." The measurable objectives established for the promotion of the health of the nations young people may be measurable by traditional public health indices.[27] But the development of comprehensive school health programs will require a concerted effort to understand the multidimensional determinants of health behavior.

Many of the social and economic inequities related to health behaviors

and consequent health outcomes are not within the realm of school education. They are simply not amenable to change through the available mechanisms of the schools. So the fundamental question becomes what is the role of schools in meeting these objectives?

First, the national plan[28] for meeting these objectives includes broad based health promotion efforts throughout the community to both augment and supplement the schools. Health education efforts are increasing in the community at large, in hospitals and clinics, and at the worksite. In addition, the plan provides for a "triad of effort" including numerous public health protection programs (infectious disease control, fluoridation, etc.) and preventive health services (high blood pressure control, pregnancy and infant health) in addition to health promotion.

According to Kolbe,[29] former Director of the School Health Education Project at the National Center for Health Education, we should and can expect school health education to accomplish five major tasks*; Expectations from school health education -

1. Increasing understanding about the philosophy and science of individual and societal health.
2. Increasing the competencies of individuals to make decisions about personal behaviors that influence their own health.
3. Increasing the skills required by individuals to engage in behaviors that are conducive to health.
4. Contributing to the elicitation of behaviors that are conducive to health.
5. Increasing the skills of individuals to maintain and improve the health of their families and the communities in which they reside.

* See entire journal article for elucidation.

However, the challenge is formidable. One critic[30] of school health education cited several constraints of school health education programs which have acted as important constraints to implementing behaviorally-oriented programs resulting in demonstrated life-style changes, better decision-making, and enhanced social interaction abilities. These included*:

1. Academic and philosophical orientation to cognitive learning - Knowledge alone has not demonstrated a significant influence on behavior.

2. Lecture-oriented teaching methods - Overall still the predominant method of choice which has impeded efforts to facilitate behavioral change.

3. Inadequate assessment of students' interests, needs, and influences on health behaviors - Little real effort expended to do needs assessments, often utilized outdate curriculums and textbooks, policies against controversial topics may undermine student interests, seldom consider the social and environmental influences on behaviors of students.

4. Captive audience - Contends that elective attendance would be expected to be more successful than a compulsory curriculum.

5. Competing subject areas and lack of administrative support - Health education is a low priority subject in the school curriculum, and as a result is underfunded and frequently taught by untrained teachers.

6. Competing influences on student behavior - The effect of more powerful and often negative influence of peers, family, and media may mitigate and neutralize positive efforts.

7. Behavior change attempts directed against ingrained personal health habits - The most superb efforts of school health education programs alone cannot change life-styles without support from the family, community, and health professionals.

8. Inadequate coordination with community health promotion efforts - Results in duplication or no effort at all. Fragmentation is the result.

9. Lack of Consensus regarding the educational goals of health education curricula - General lack of consensus regarding desired outcomes has been an impediment.

*See entire journal article for elucidation

In closing, the perspectives of Carlyon[30] serve to clarify the apparent conflicts over the role of the schools in modifying health behavior. He reminds us that we are working in the area of personal lifestyles of well people, and that we may create a new class of deviance by labeling certain behaviors as unhealthful. The ethical question becomes "who will decide what behaviors of well people are of sufficient potential threat to individuals or society to be declared unhealthful (deviant)....."

He extends this concern to the school in that the medical/public health model, by assuming deviant behaviors, is accompanied by a near compulsion to intervene and "fix" something. He dichotomizes the goals of public health and of school health education. The former purports to use education to solve problems, prevent disease, and to change deviant (unhealthy) behavior. In contrast, the goals of school health education are to encourage normal growth, development, and inquiry so as to produce knowledgeable, self-directed, independent learners." These goals are long term, cumulative, and enabling.

In conclusion, the seemingly incompatiable goals between public health and school health articulated by Carlyon may be resolved by attempting to meet the expectations declared by Kolbe. If these expectations are met, the goals of both public health (the nation's objectives) and school health may be met. The major barriers to such success, previously listed as nine constraints to school health programs, must first be constructively resolved.

The achievement of the nation's goals is, in final determination, contingent upon two fundamental premises. The first is a better understanding of the determinants of health behavior so that appropriate methodologies can be selected, innovated, and evaluated (Again, one such example is the use of

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innoculation theory used in experimental designs within drug education). Health educators must be involved, and school districts must insure health teachers are highly qualified. The second premise, related to the first, is that the general external support for school health programs is currently extremely high when viewed from a public health viewpoint, but internally most school districts give it lowest priority as demonstrated by commitment to funding, curricula, and teaching assignments. These issues must be resolved in order to reach the nation's goals. Both premises are mutually interdependent. Accomplishment of one without the other will result in failure. Resolution of both will be a significant move towards measurable success.

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APPENDICES

I. A. Surgeon General's Goals for 1990
B. Objectives for the Nation that can be (a) Directly Attained or (b) Influenced in Important Ways by Schools

II. A Typology of Health Behaviors

III. Bloom's Taxonomy of Health Behavior

IV. Locus of Control Summaries

V. A. Piaget's Stages of Cognitive Development
B. Kohlberg's Stages of Moral Development

VI. Relationships Between Piaget and Kohlberg

VII. Health Belief Model

VIII. PRECEDE Model

APPENDIX I. A.

Table 1
Surgeon General's Goals for 1990

Life Stage	1990 Goal	Special Problems
Infants	25% fewer deaths* (less than 9/1000 births)	low birth weight infants birth defects
Children (ages 1-14)	20% fewer deaths* (less than 34/100,000)	growth and development accidents and injuries
Adolescents and Young Adults (ages 15-24)	20% fewer deaths* (less than 93/100,000)	fatal motor vehicle accidents alcohol and drug misuse
Adults (ages 25-64)	25% fewer deaths* (less than 400/100,000)	heart attacks and strokes cancer
Older Adults (ages 65+)	20% fewer days restricted* (less than 30/year)	influenza and pneumonia ability to function independently

*Relative to 1977

Source: U.S. Department of Health, Education and Welfare. Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention. Washington, DC: Government Printing Office, 1979.

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Table 2
Objectives for the Nation that can be (a) Directly Attained or (b) Influenced in Important Ways by Schools

(A) High Blood Pressure Control

- Increased public/professional awareness via school health education

1. By 1990, at least 50 percent of adults should be able to state the principal risk factors for coronary heart disease and stroke, i.e., high blood pressure, cigarette smoking, elevated blood cholesterol levels, diabetes. a
2. By 1990, at least 90 percent of adults should be able to state whether their current blood pressure is normal (below 140/90) or elevated, based on a reading taken at the most recent visit to a medical or dental professional or other trained reader. a

(B) Family Planning

- Increased public/professional awareness via school health education

3. By 1990, at least 75 percent of men and women over the age of 14 should be able to describe accurately the various contraceptive methods, including the relative safety and effectiveness of one method versus the others. a

- Reduced risk factors objectives that could be influenced by school health programs

4. By 1990, there should be virtually no unintended births to girls 14 years old or younger. Fulfilling this objective would probably reduce births in this age group to near zero. b
5. By 1990, the fertility rate for 15-year-old girls should be reduced to 10 per 1,000 b
6. By 1990, the fertility rate for 16-year-old girls should be reduced to 25 per 1,000. b
7. By 1990, the fertility rate for 17-year-old girls should be reduced to 45 per 1,000. b
8. By 1990, reductions in unintended births among single American women (15 to 44 years of age) should reduce the fertility rate in this group to 18 per 1,000. b
9. By 1990, the proportion of abortions performed in the second trimester of pregnancy should be reduced to 6 percent, thereby reducing the death-to-case rate for legal abortions in the United States to 0.5 per 100,000. b
10. By 1990, the availability of family planning information and methods (education, counseling and medical services) to all women and men should have sufficiently increased to reduce by 50 percent the disparity between Americans of different economic levels in their ability to avoid unplanned births. b

(C) Pregnancy and Infant Health

- Increased public/professional awareness via school health education

11. By 1990, 85 percent of women of childbearing age should be able to choose foods wisely (state special nutritional needs of pregnancy) and understand the hazards of smoking, alcohol, pharmaceutical products and other drugs during pregnancy and lactation. a

(D) Immunization

- Improved services/protection via school health services

12. By 1990, at least 95 percent of children attending licensed day care facilities, and kindergarten through 12th grade should be fully immunized. a

- Improved surveillance/evaluation systems via school health services

13. By 1990, at least 95 percent of all children through age 18 should have up-to-date official immunization records in a uniform format using common guidelines for completion of immunization. a

- Improved health status objectives that could be influenced by school health programs

14. By 1990, reported measles incidence should be reduced to less than 500 cases per year--all imported or within two generations of importation. b
15. By 1990, reported mumps incidence should be reduced to less than 1,000 cases per year. b
16. By 1990, reported rubella incidence should be reduced to less than 1,000 cases per year. b
17. By 1990, reported congenital rubella syndrome incidence should be reduced to less than 10 cases per year. b
18. By 1995, reported diphtheria incidence should be reduced to less than 50 cases per year. b
19. By 1990, reported pertussis incidence should be reduced to less than 1,100 cases per year. b
20. By 1990, reported tetanus incidence should be reduced to less than 50 cases per year. b
21. By 1990, reported polio incidence should be less than 10 cases per year. b

(E) Sexually Transmitted Diseases

- Increased public/professional awareness via school health education

22. By 1990, every junior and senior high school student in the United States should receive accurate, timely education about sexually transmitted diseases a

- Improved health status objectives that could be influenced by school health programs

23. By 1990, reported gonorrhea incidence should be reduced to a rate of 280 cases per 100,000 population. b
24. By 1990, reported incidence of gonococcal pelvic inflammatory disease should be reduced to a rate of 60 cases per 100,00 females. b
25. By 1990, reported incidence of primary and secondary syphillis should be reduced to a rate of 7 cases per 100,000 population per year, with a reduction in congenital syphillis to 1.5 cases per 100,000 children under 1 year of age. b
26. By 1990, the incidence of nongonococcal urethritis and chlamydial infections should be reduced to a rate of 770 cases per 100,000 population. b

(F) Toxic Agent Control

- Increased public/professional awareness via school health education

27. By 1990, at least half of all people ages 15 years and older should be able to identify the major categories of environmental threats to health and note some of the health consequences of those threats. a

(G) Occupational Safety and Health

- None that can be addressed by schools

(H) Accident Prevention and Control

- Increased public/professional awareness via school health education

28. By 1990, the proportion of parents of children under age 10 who can identify appropriate measures to address the three major risks for serious injury to their children (i.e., motor vehicle accidents, burns, poisonings) should be greater than 80 percent. a

- Improved health status objectives that can be influenced by school health programs

29. By 1990, the motor vehicle fatality rate for children under 15 should be reduced to no greater than 5.5 per 100,000 children. b
30. By 1990, the home accident fatality rate for children under 15 should be no greater than 5.0 per 100,000 children. b

(I) Fluoridation and Dental Health

- Increased public/professional awareness via school health education

31. By 1990, at least 95 percent of school children and their parents should be able to identify the principal risk factors related to dental diseases and be aware of the importance of fluoridation and other measures in controlling these diseases. a
32. By 1990, at least 75 percent of adults should be aware of the necessity for both thorough personal oral hygiene and regular professional care in the prevention and control of periodontal disease. a

APPENDIX III.

Bloom 1960 - Developed and Theory

Taxonomy CLASSIFICATIONS OF HEALTH BEHAVIOR*

"Behavior - the ways in which individuals...think...feel...act"

Handout IIA1

COGNITIVE DOMAIN (Think)

Those objectives which deal with recall or recall or recognition of knowledge and the development of intellectual abilities and skills.

a. Knowledge (of specifics, terminology, facts, ways and means of dealing with specifics, conventions, trends and sequences, classifications and categories, criteria, methodology, universals and abstractions, principles and generalizations, theories and structures)
b. Intellectual Abilities and Skills (comprehension, interpretation, application, analysis, synthesis, evaluation)

AFFECTIVE DOMAIN (Feel)

Those objectives which describe changes in interest, attitudes, and values, and the development of appreciations and adequate adjustments.

a. Receiving (awareness, willingness to receive, controlled or selected attention)
b. Responding (acquiescence, willingness to respond, satisfaction in response)
c. Valuing (acceptance, preference, commitment)
d. Organization (conceptualization of a value, organization of a value system)
e. Characterization by a Value or Value Complex (generalized set, characterization)

Cognitive and Affective Behaviors- demonstration of these health behaviors is evaluated usually in a hypothetical rather than a life situation.

Example: Ability to analyze critically a health advertisement or to express attitudes about self-diagnosis and self-medication.

ACTION DOMAIN

Those aspects of health behaviors in which the individual actually applies knowledge and attitudes to a life situation.

a. Observable Health Behaviors - those life health behaviors that can be observed and evaluated to some extent in the classroom setting.
Examples: how a student relates to others, activities, on the playground or in the school enviroment, personal appearance and grooming and food selection in school cafeteria.
b. Non-observable Health Behaviors- those health behaviors that cannot be observed systematically in a school setting and where information regarding the practice is derived often by inquiry of the student or others aware of his practices.
Examples: smoking habits, nutritional practices, safety practices outside of the school environment, conduct on a date, use of alcoholic beverages, practices related to dental health, sleep, acticity, and relationships within the family group.
c. Delayed Behaviors- those health behaviors that will not or cannot be

practiced in life situations until after the student reaches adulthood, is confronted with the problem, or is in a position to assume greater responsibility for his own behavior.
Examples: supporting health legislation, choosing a medical adviser, maintaining desirable weight throughout life, getting regular medical and dental check-ups, avoiding medical and health quackery, and using existing community health services.

*School Health Education Study, Health Education - A conceptual Approach to Curriculum Design, pp. 30-31.

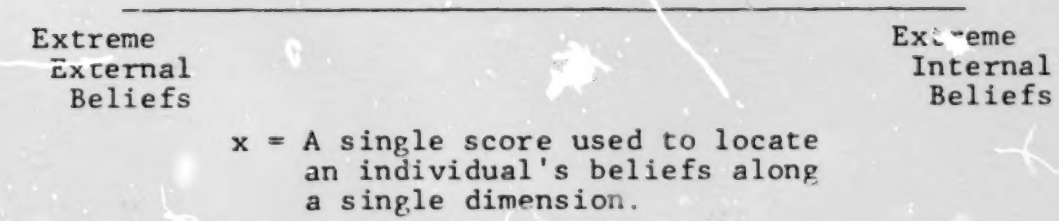
LOCUS OF CONTROL SUMMARIES

1. Rotter's social learning theory postulated that:
   "The potential for a behavior to occur in any specific psychological situation is a function of the expectancy that the behavior will lead to a particular reinforcement in that situation and the value of that reinforcement."

2. Meaning: Two generalized expectancies:
   A. Reinforcement is either under the control of the individual (INTERNAL LOCUS of CONTROL) or
   B. Reinforcement is under the control of outside forces such as fate, luck, chance, or powerful others (EXTERNAL LOCUS of CONTROL).

3. Can health behaviors be explained by individual's beliefs about influence their behaviors have on their health? Theoretical, knowledge of locus of control expectancies together with knowledge about values, should contribute to a prediction of health behavior. Supporting data:
   A. Strickland cited relationship between belief in internal control and corresponding physical health/well-being.
   B. Studies National Heart and Lung Institute conference studies noted EXTERNALS are less likely to comply than INTERNALS.
   C. Rosenstock's discussion individual responsibility for health maintenance noted EXTERNAL CONTROL associated higher morbidity rates, lower rates compliance, lower health motivation, reduced ability to control weight, smoking, and use of alcohol and other drugs.

4. Changing Conceptions:
   A. Originally conceived as unidimensional construct:


Extreme External Beliefs
Extreme Internal Beliefs
x = A single score used to locate an individual's beliefs along a single dimension.

   B. Factor analyses have rendered data to support viewing LOCUS of CONTROL as multidimensional. New scales, in addition to measuring internality, separate EXTERNALITY into two components: (1) Belief in fate or chance; (2) Belief in control by powerful others.

5. Pertinent points of controversy:
   A. There is great controversy over the proliferation of instruments to measure locus of control beliefs. Health Locus of Control Scales were developed from more highly generalized scales and represent a middle ground between general and specific.

B. Beliefs in locus of control are not straightforward predictors of health behavior or population group differences. Undoubtably, there is interaction between locus of control and other psychological constructs. True multivariate analysis is needed, but rare in the literature.

6. Utilization (potential) of LOCUS of CONTROL by health educators:

A. Program evaluation
B. Training or teaching internality
C. Tailoring programs for individuals with different belief systems.

7. Conclusion (Gordon's):

A. Researchers must determine relationship between LOCUS of CONTROL and other variables. For example, is the Health Belief Model more true of internals or externals.

B. If LOCUS of CONTROL can be measured, is it really possible to teach internality considering age, sex, culture, etc. so that there are long term benefits.

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APPENDIX V. A. PIAGET & B. KOHLBERG

Figure 6. Piaget's Stages of Cognitive Development

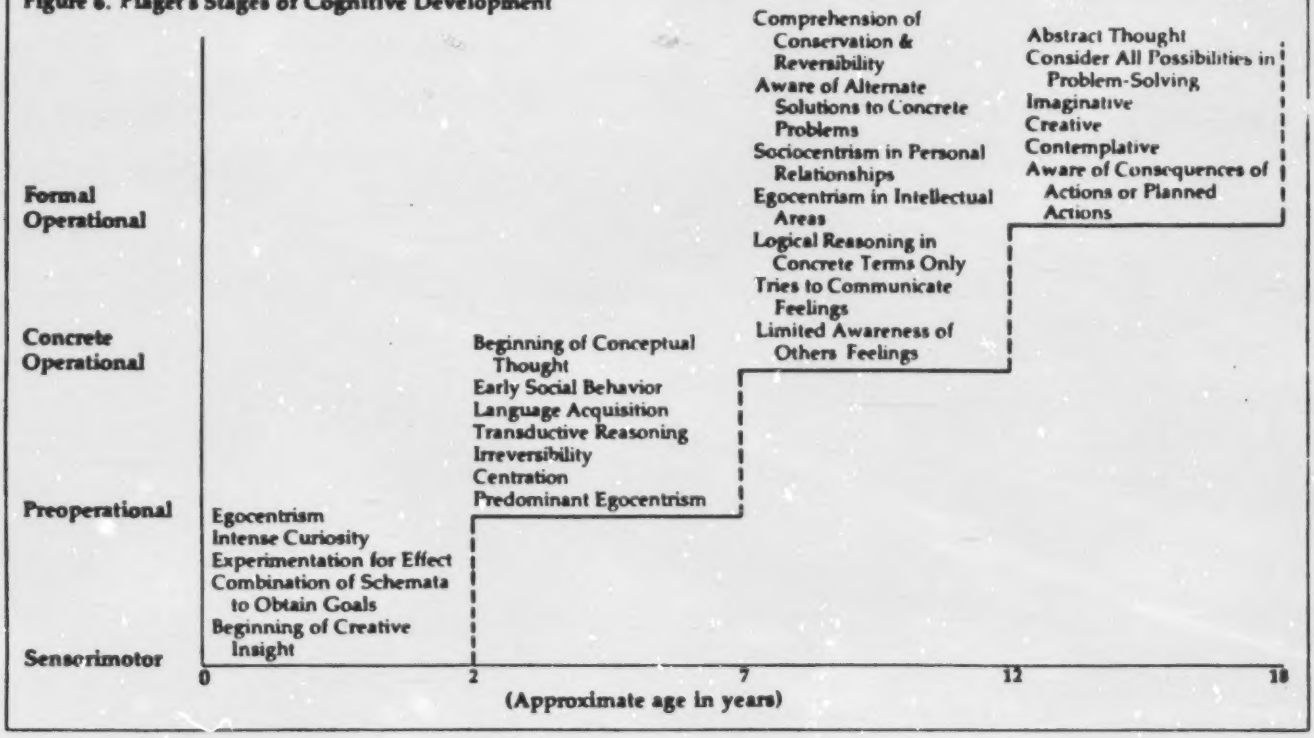
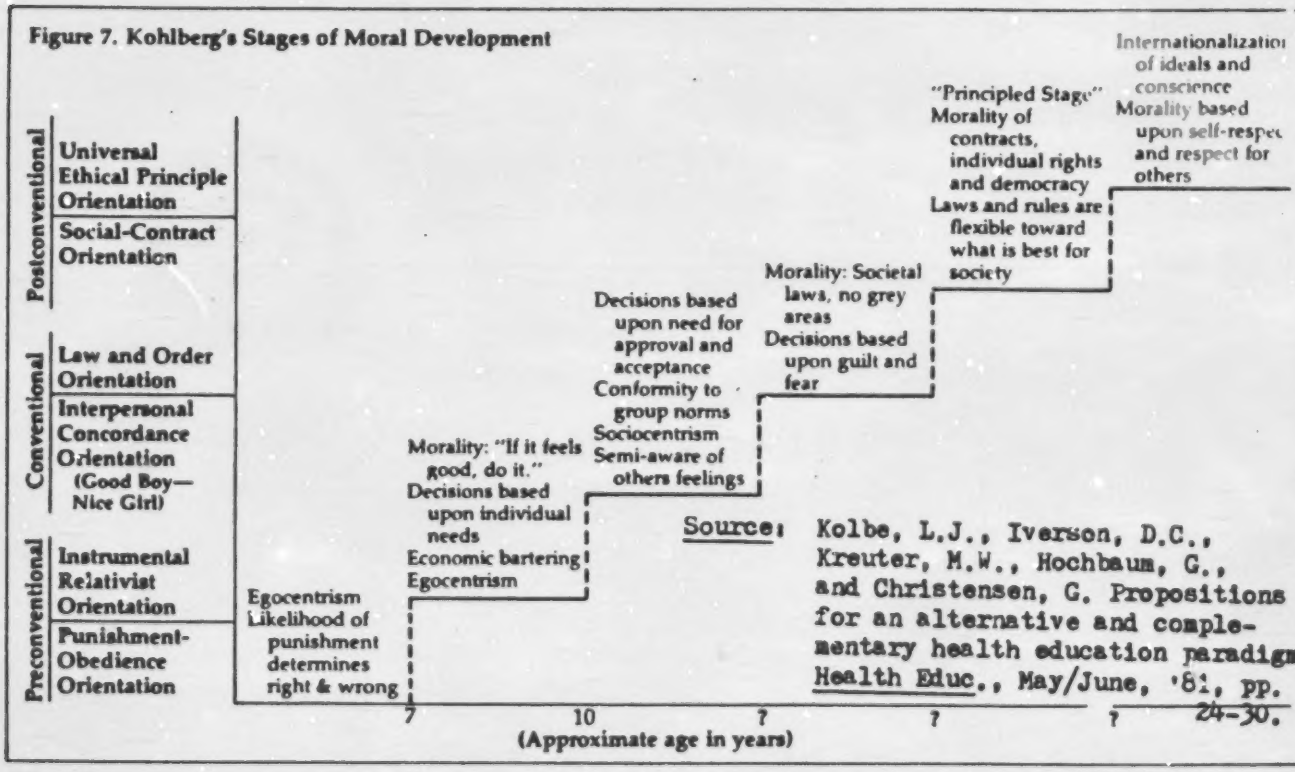


Figure 7. Kohlberg's Stages of Moral Development



Source: Kolbe, L.J., Iverson, D.C., Kreuter, M.W., Hochbaum, G., and Christensen, G. Propositions for an alternative and complementary health education paradigm. Health Educ., May/June, '81, pp. 24-30.

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APPENDIX VI. RELATIONSHIPS BETWEEN PIAGET AND KOHLBERG

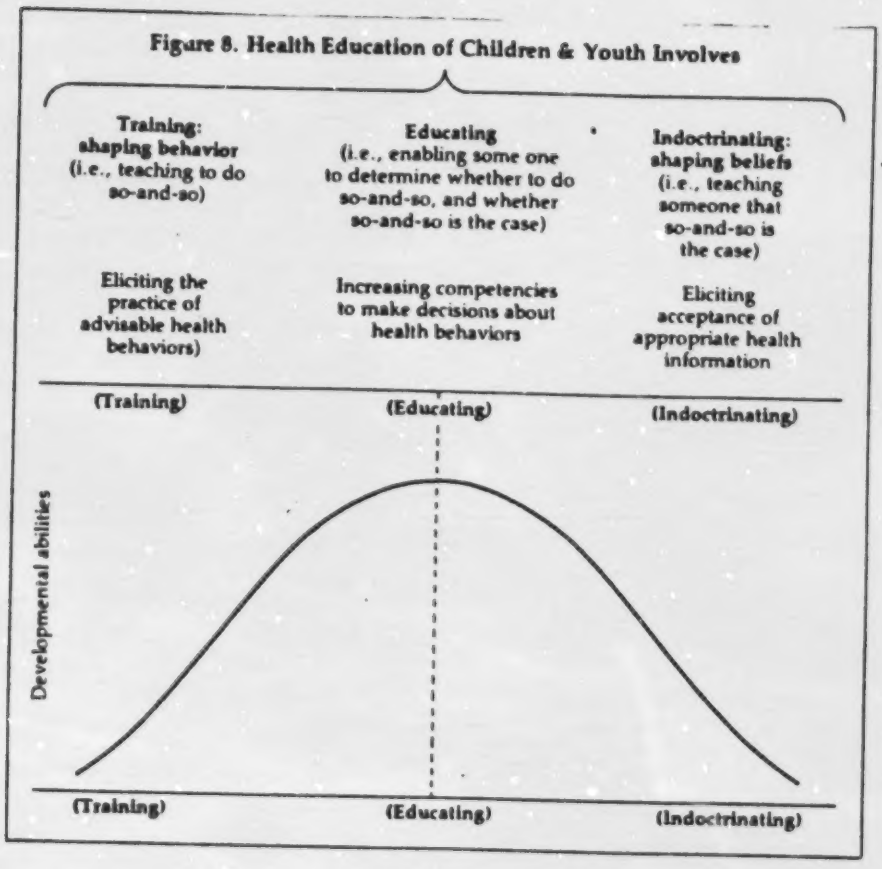
Figure 8. Health Education of Children & Youth Involves
Training: shaping behavior (i.e., teaching to do so-and-so)
Educating (i.e., enabling some one to determine whether to do so-and-so, and whether so-and-so is the case)
Indoctrinating: shaping beliefs (i.e., teaching someone that so-and-so is the case)
Eliciting the practice of advisable health behaviors)
Increasing competencies to make decisions about health behaviors
Eliciting acceptance of appropriate health information
(Training)
(Educating)
(Indoctrinating)
Developmental abilities
(Training)
(Educating)
(Indoctrinating)

HEALTH EDUCATION—MAY/JUNE 1981 29

Source: Kolbe, L.J., Iverson, D.C., Kreuter, M.W., Hochbaum, G., and Christensen, G. Propositions for an alternative and complementary health education paradigm. Health Education, May/June, 1981, pp. 24-30.

APPENDIX VII.

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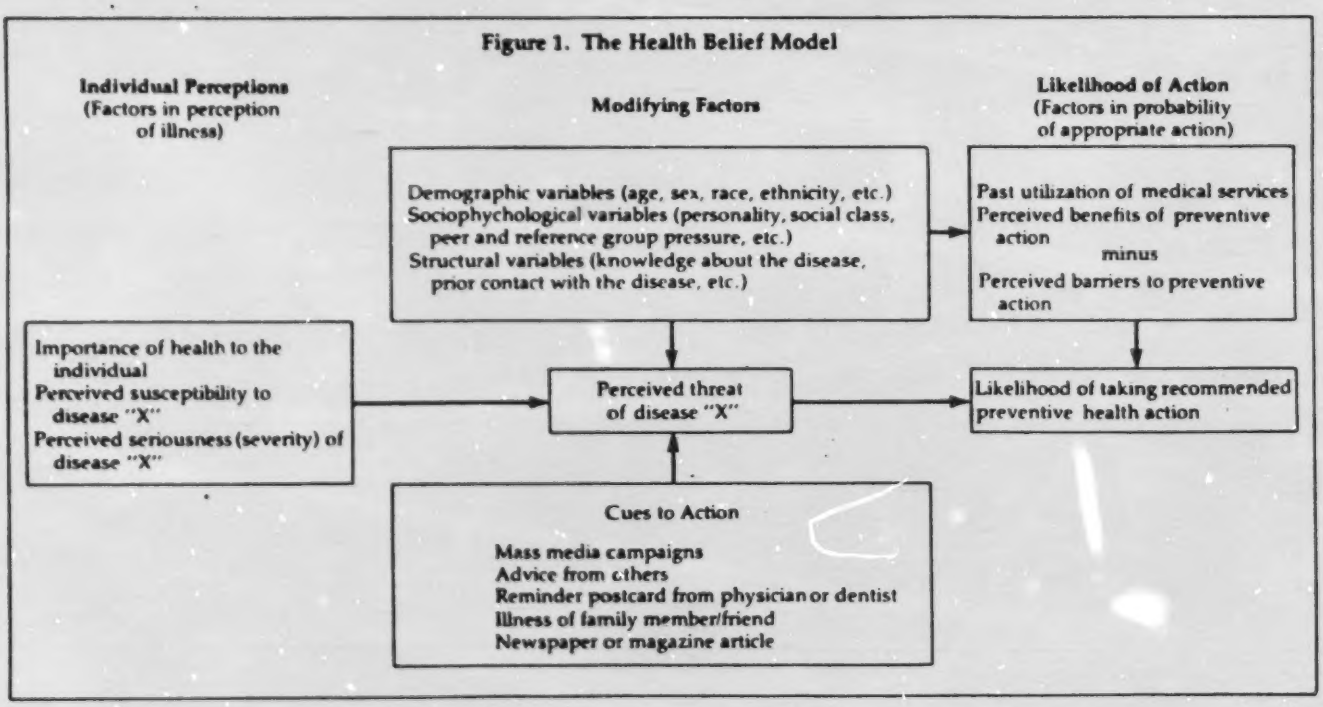
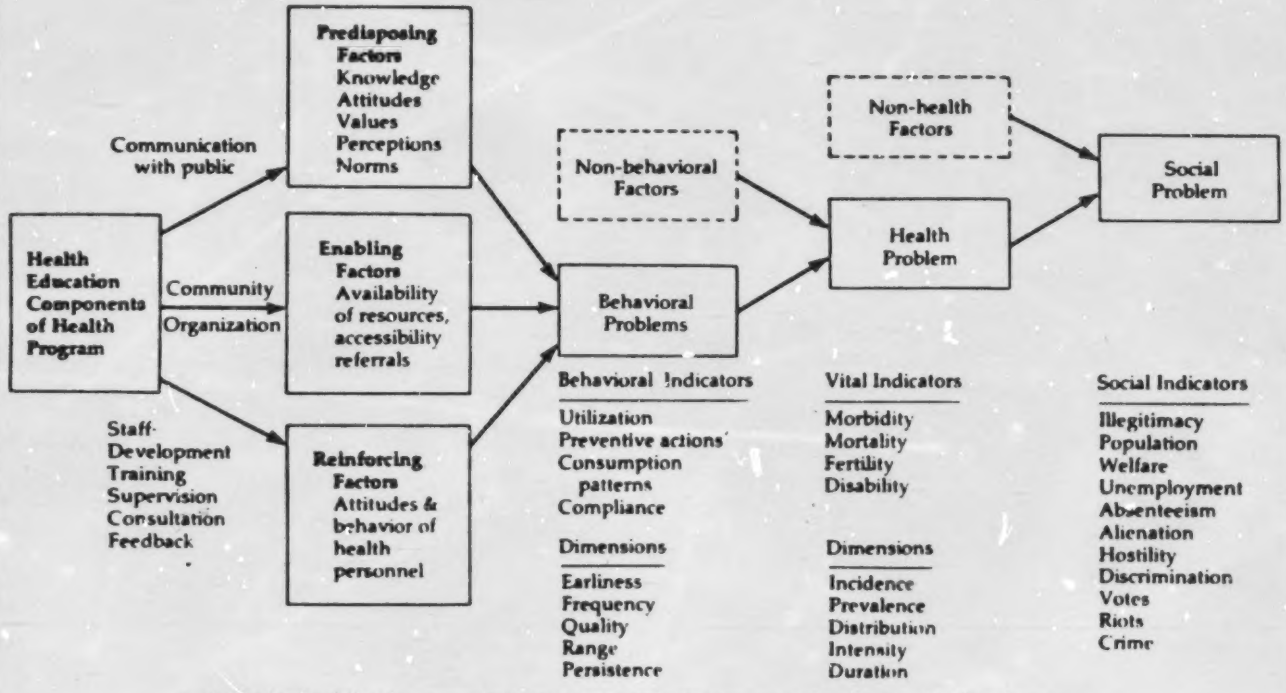
Figure 1. The Health Belief Model


Individual Perceptions
(Factors in perception of illness)
Modifying Factors
Likelihood of Action
(Factors in probability of appropriate action)
Demographic variables (age, sex, race, ethnicity, etc.)
Sociophychological variables (personality, social class, peer and reference group pressure, etc.)
Structural variables (knowledge about the disease, prior contact with the disease, etc.)
Past utilization of medical services
Perceived benefits of preventive action
minus
Perceived barriers to preventive action
Importance of health to the individual
Perceived susceptibility to disease "X"
Perceived seriousness (severity) of disease "X"
Perceived threat of disease "X"
Likelihood of taking recommended preventive health action
Cues to Action
Mass media campaigns
Advice from others
Reminder postcard from physician or dentist
Illness of family member/friend
Newspaper or magazine article

APPENDIX VIII.

Figure 2. The PRECEDE* Model



Approximate relationships among "objects of interest" in the planning and evaluation of health education.

*PRECEDE is an acronym for predisposing, reinforcing, and enabling causes in educational diagnosis and evaluation.

26 HEALTH EDUCATION—MAY/JUNE 1981

Source: Green, L.W., Kreuter, M.W., Deeds, S.G. and Partridge, K.B. Health Education Planning - A Diagnostic Approach. John Hopkins University: Mayfield, 1980.

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